Remarks

The Office Action dated August 23, 2002 has been carefully reviewed and the foregoing amendment has been made in consequence thereof. Submitted herewith, in Appendix A, is a Submission of Marked Up Claims, in accordance with 37 C.F.R. §1.121.

Claims 1-20 are now pending in this application. Claims 1-20 stand rejected.

The rejection of Claims 1-20 under 35 U.S.C. § 102(b) as being anticipated by Michaels is respectfully traversed.

As amended, Claim 1 recites, "An electronically commutated brushless motor comprising: a housing having a circumferential internal wall, said housing closed at a distal end by a first end cap and closed at an opposing proximal end by a second end cap; at least one position sensor for sensing a position of a rotor of said motor during operation of said motor; a bridge integrally formed with an end wall formed at said proximal end of said housing, said bridge configured to substantially enclose and precisely support said position sensor within a generally hollow interior area of said bridge adjacent an interior area of said housing; a plurality of locating ribs integrally formed on said internal wall of said housing and configured to precisely situate a stator; and wherein said locating ribs and said bridge, both being integrally formed on said

housing, eliminate the possibility of misalignment of said position sensor relative to said stator during assembly of said motor."

Michaels et. al. does not show or describe a motor including a housing having a circumferential internal wall closed at a distal end by a first end cap and closed at an opposing proximal end by a second end cap. More specifically, Michaels et. al. does not show or describe a housing. Even more specifically, Michaels et. al does not show or describe a housing having a circumferential internal wall. Still further, Michaels et. al. does not show or describe a housing closed at a distal end by a first end cap and closed at a proximal end by a second end cap. Rather, Michaels et. al. appears to show in Figure 1A, and describes at column 3, lines 56-63, a reluctance machine 10 having a front end-shield 12a and a rear end-shield 12b positioned adjacent to and attached to a stator 11 by a number of bolts 13a and nuts 13b.

Additionally, it appears the Office sets forth the position that the front and rear end-shields 12a and 12b are one housing. Michaels et. al. does not show or describe the front and rear end-shields 12a and 12b as one housing, but rather shows and describes end-shields 12a and 12b as separate and independent end-shields attached to opposing ends of stator 11. Additionally, Michaels. et. al. does not show, describe, or suggest the separate and independent end-shields 12a and 12b as having a circumferential internal wall closed at a proximal end by a first end shield and closed at

a distal end by a second end shield. Therefore, Michaels et. al. does not show, describe, or suggest a housing with an internal wall closed at a distal end by a first end cap and closed at a proximal end by a second end cap.

Furthermore, Michaels et. al. does not show or describe a bridge integrally formed with an end wall at the proximal end of the housing, wherein the bridge is configured to substantially enclose and precisely support the position sensor within a generally hollow interior area of the bridge adjacent an interior area of said housing. Rather, Michaels et. al. describes, at column 4, lines 48-54, a sensor board 25 coupled to the rear end-shield 12b, wherein the sensor board 25 includes at least one optical sensor, and Figure 1B shows that sensor board 25 is coupled to the exterior side of rear end-shield 12b.

The Office remarks that Michaels et. al. shows a U-shaped projection attached to an outer wall of end-shield 12b where sensor board 25 is located within a generally hollow interior area. Applicants respectfully submit that the U-shaped projection in Michaels et. al does not show or describe a position sensor enclosed and precisely supported within a generally hollow interior area adjacent an interior area of the housing. Rather, as remarked by the Office and shown in Figure 1B, Michaels et. al. shows the sensor board 25 located in the U-shaped projection coupled to the outer wall of the end-shield 12b, such that the sensor board 25 is located on an outer side of end-shield 12b.

Further yet, Michaels et. al. does not show or describe a plurality of locating ribs integrally formed on the internal wall of the housing and configured to precisely situate a stator. Rather, Michaels et. al. shows in Figure 3B and describes, at column 6, lines 29-42, a stator 11 having an outer surface that has a number of notched regions 39a and 39b whereby front and rear end-shields 12a and 12b are designed to have contours that closely follow the outer surface of stator 11. Therefore, Michaels et. al. does not show or describe a plurality of locating ribs integrally formed on an internal wall of a housing and configured to precisely situate a stator, but rather shows and describes a pair of separate and independent end-shields 12a and 12b that closely follow the outer surface of stator 11.

Even further, Michaels et. al does not show or describe a housing wherein the locating ribs and the bridge are both integrally formed on the housing to eliminate the possibility of misalignment of the position sensor relative to the stator during assembly of the motor. Rather, Michaels et. al. describes, at column 6, lines 29-42, a stator 11 having an outer surface that has a number of notched regions 39a and 39b whereby front and rear end-shields 12a and 12b are designed to have contours that closely follow the outer surface of stator 11. Additionally, at column 7, lines 1-5, Michaels et. al. describes the close fit between end-shields 12a and 12b and stator 11 greatly reduces the amount of air drawn in or expelled by machine 10, thereby reducing the noise generated by machine 10. Therefore, Michaels et. al. does not show ,describe, or

suggest a housing having locating ribs and a bridge integrally formed on the housing to eliminate the possibility of misalignment of the position sensor relative to the stator during assembly of said motor, but rather shows and describes two separate and independent end-shields 12a and 12b that closely follow the contour of the outer surface of stator 11 to reduce noise.

Claims 2-6 depend, directly or indirectly, from Claim 1. When the recitations of Claims 2-6 are considered in combination with the recitations of Claim1, Applicants submit that Claims 2-6 are likewise patentable over Michaels et. al.

As amended, Claim 7 recites, "A method for accurately aligning a position sensor of an electronically commutated motor relative to a position of a stator of the motor, the method comprising: forming a housing having a circumferential internal wall, a plurality of integrally formed stator locating ribs formed on the circumferential internal wall, an end wall integrally formed at a proximal end of the circumferential internal wall, and a position sensor bridge integrally formed on the end wall, wherein the housing is closed at a distal end by a first end cap and closed at a proximal end second end cap; securing at least one position sensor to a generally hollow interior area of the position sensor bridge such that the position sensor is substantially enclosed by the position sensor bridge inside the housing; and inserting a stator into the housing such that an angular orientation of the stator is precisely aligned by the stator locating ribs, relative to the

position sensor bridge, to thereby eliminate the possibility of misalignment of the stator relative to the position sensor during assembly of the motor."

In accordance with the remarks set forth above, in reference to Claim 1, Applicants respectfully submit that Claim 7 is patentable over Michaels et. al.

Claims 8-14 depend, directly or indirectly, from Claim 7. When the recitations of Claims 8-14 are considered in combination with the recitations of Claim 7, Applicants submit that Claims 8-14 are likewise patentable over Michaels et. al.

As amended, Claim 15 recites, "An electronically commutated brushless motor comprising: a housing including: a circumferential internal wall having at least one locating rib, said circumferential internal wall being closed at a distal end by a first end cap and closed at a proximal end by a second end cap; an integrally formed end wall; at least one position sensor bridge integrally formed with said end wall, said position sensor bridge having a hollow internal area adjacent an internal area of said housing; a position sensor secured to said position sensor bridge so as to be substantially disposed within said hollow internal area; a stator having a peripheral outer surface adapted to engage with said one locating rib when said stator is inserted into said housing; and wherein said locating rib and said bridge, both being integrally formed on said housing, eliminate the possibility of misalignment of said stator relative to said position sensor during assembly of said motor."

In view of the remarks set forth above, in reference to Claim 1, Applicants respectfully submit that Claim 15 is patentable over Michaels et. al.

Claims 16-18, depend, directly or indirectly, from Claim 15. When the recitations of Claims 16-18 are considered in combination with the recitations of Claim 15, Applicants submit that Claims 16-18 are likewise patentable over Michaels et. al.

As amended, Claim 19 recites, "A housing for a brushless motor which enables a stator and at least one rotor position sensing component to be readily accurately aligned relative to each other during assembly, said housing comprising: a circumferential wall portion forming a interior area into which a stator may be inserted, said circumferential wall portion including at least one locating member integrally formed on an internal surface thereof, and wherein said locating member is adapted to engage with a portion of a peripheral outer surface of said stator such that said stator is angularly orientated in a precise orientation within said housing when inserted into said circumferential wall portion; an end wall integrally formed with said circumferential wall portion and defining a portion of an enclosure for said stator; said end wall having an opening for permitting a shaft of a rotor disposed within said stator to project therethrough; a position sensor bridge portion integrally formed with said end wall and being disposed adjacent said opening, said position sensing bridge being adapted to support at least one position sensor fixedly relative to said end wall such that said position sensor is adjacent said interior area of said circumferential wall portion; and

wherein said locating member and said position sensor bridge, both being integrally formed on said housing, eliminate the possibility of misalignment of said stator relative to said rotor during assembly of said motor."

In view of the remarks set forth above, in reference to Claim 1, Applicants respectfully submit that Claim 19 is patentable over Michaels et. al.

As amended, Claim 20 recites, "A method for assembling a brushless motor, comprising: providing a housing having a circumferential wall portion, at least one integrally formed locating member on an interior surface of the circumferential wall portion, an end wall having an opening, and a mounting bridge integrally formed on the end wall adjacent to the opening; providing a stator having a peripheral surface adapted to engage with the locating member when the stator is inserted into the circumferential wall portion; providing at least one position sensor for detecting a position of a shaft of a rotor disposed within the stator; inserting the stator into the circumferential wall portion such that the peripheral surface engages with the locating member and places the stator in a precise angular orientation within the housing; inserting the rotor into the stator such that the rotor shaft projects through the opening in the end wall and adjacent the mounting bridge; securing the position sensor to an interior wall of the mounting bridge adjacent an interior area of the housing; and wherein the mounting bridge precisely angularly orientates the position sensor relative to the stator.

In view of the remarks set forth above, in reference to Claim 1, Applicants respectfully submit that Claim 20 is patentable over Michaels et. al.

For the reasons set forth above, Applicants respectfully request that the Section 102(b) rejection of Claims 1-20 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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